



## SEQUENCE LISTING

<110> Innogenetics N.V.

<120> Process for typing of HCV isolates

<130> 2551-111

<140> 09/899,082

<141> 2001-07-06

<150> 09/378,900

<151> 1999-08-23

<150> 09/044,665

<151> 1998-03-19

<150> 08/256,568

<151> 1994-07-18

<150> PCT/EP93/03325

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<150> EP92403222

<151> 1992-11-27

<150> EP93402129

<151> 1993-08-31

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<170> PatentIn version 3.1

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cccgccatt tggcgtgcc cccgcaagac tgctagccga gttagcgttgg gttgcga 177

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cccagaaatt tggcgtgcc cccgcaagac cactagccga gttagcgttgg gtcgcga 177

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ctcgaaatt tggcgtgcc cccgcaagac tgctagccga gtagtgttgg gtcgcga 177

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35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
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Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
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Val

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35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ala Cys Lys Ala  
65 70 75 80

Ala Gly Ile Val Asp Pro Val Met Leu Val Cys Gly Asp Asp Leu Val  
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Val Ile Ser Glu Ser Gln Gly Asn Glu Glu Asp Glu Arg Asn Leu Arg  
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Ala

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35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Val Lys Ala Gln Ala Ala Cys Lys Ala  
65 70 75 80

Ala Gly Ile Ile Ala Pro Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ser Glu Ser Gln Gly Thr Glu Glu Asp Glu Arg Asn Leu Arg  
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Ala

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Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly Ala Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Thr Ala Ala Lys Ala  
65 70 75 80

Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Val Ala Glu Ser Asp Gly Val Asp Glu Asp Arg Ala Ala Leu Arg  
100 105 110

Ala

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<400> 86

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Thr Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Lys Ala  
65 70 75 80

Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Pro Leu Gly  
100 105 110

Ala

<210> 87  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 87

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Arg Ala Ile Thr Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Arg Gly Asp Leu  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
65 70 75 80

Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
100 105 110

Ala

<210> 88  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 88

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Thr Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
65 70 75 80

Ser Gly Leu Arg Asp Cys Thr Met Leu Val Tyr Gly Asp Asp Leu Val  
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
100 105 110

Val

<210> 89  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 89

Ser Thr Val Thr Glu Lys Asp Ile Arg Val Glu Glu Glu Val Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Thr Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
65 70 75 80

Ala Gly Leu Arg Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ala Glu Ser Asp Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
100 105 110

Ala

<210> 90  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 90

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Tyr Asn Ser Lys Gly Asp Leu  
35 40 45

Cys Gly Gln Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50 55 60

Gly Asn Thr Val Thr Cys Tyr Leu Lys Ala Val Ala Ala Thr Arg Ala

65                   70                   75                   80

Ala Gly Leu Lys Gly Cys Ser Met Leu Val Cys Gly Asp Asp Leu Val  
85                                           90                                   95

Val Ile Cys Glu Ser Gly Gly Val Glu Glu Asp Ala Arg Ala Leu Arg  
100                                       105                                   110

Ala

<210> 91  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 91

Ser Thr Val Thr Glu Arg Asp Ile Lys Val Glu Glu Glu Val Tyr Gln  
1                                       5                                   10                                   15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Val Ile Ala Ala Leu Thr  
20                                       25                                   30

Glu Arg Leu Tyr Val Gly Gly Pro Met His Asn Ser Lys Gly Asp Leu  
35                                       40                                   45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Tyr Thr Thr Ser Phe  
50                                       55                                   60

Gly Asn Thr Met Thr Cys Tyr Leu Lys Ala Ser Ala Ala Ile Arg Ala  
65                                       70                                   75                                   80

Ala Gly Leu Lys Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85                                       90                                   95

Val Ile Ala Glu Ser Gly Gly Val Glu Glu Asp Lys Arg Ala Leu Gly  
100                                       105                                   110

Ala

<210> 92  
<211> 113  
<212> PRT

<213> hepatitis C virus

<400> 92

Ser Thr Val Thr Glu His Asp Ile Met Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Ser Cys Asp Leu Gln Pro Glu Ala Arg Ala Ala Ile Arg Ser Leu Thr  
20 25 30

Gln Arg Leu Tyr Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Gln Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ser Cys Arg Ala  
65 70 75 80

Ala Arg Leu Arg Asp Cys Thr Leu Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Ala Ile Cys Glu Ser Gln Gly Thr His Glu Asp Glu Ala Ser Leu Arg  
100 105 110

Ala

<210> 93  
<211> 18  
<212> DNA  
<213> artificial

<220>  
<223> artificial

<400> 93  
gagtgttgtta cagcctcc 18

<210> 94  
<211> 17  
<212> DNA  
<213> artificial

<220>  
<223> artificial

<400> 94  
tgcccgaaaa tttgggc 17

<210> 95  
<211> 16  
<212> DNA  
<213> artificial

<220>  
<223> artificial

<400> 95  
tgcccgaga tttggg 16

<210> 96  
<211> 17  
<212> DNA  
<213> artificial

<220>  
<223> artificial

<400> 96  
gagtgtcgaa cagcctc 17

<210> 97  
<211> 16  
<212> DNA  
<213> artificial

<220>  
<223> artificial

<400> 97  
gggggcctgg aggctg 16

<210> 98  
<211> 260  
<212> DNA  
<213> hepatitis C virus

<400> 98  
ccaccatgaa tcactccccct gtgaggaact actgtttca cgcatggaaagc gtcttagccat 60  
ggcgtagta tgagtgtcggt gcagcctcca ggacccccc tcccgggaga gccatagtgg 120  
tctgcggAAC cggtgagttac accggaaattt ccaggacgac cgggttccttt cttggatcaa 180  
cccgctcaat gcctggagat ttgggcgtgc ccccgcaaga ctgctagccg agtagtgg 240  
ggtcgcgaaa ggccttgggt 260

<210> 99  
 <211> 260  
 <212> DNA  
 <213> hepatitis C virus

<400> 99  
 ccaccataga tcactccct gtgaggaact actgtttca cgcatggaa gtcgttccat 60  
 ggcttagta tgagtgttgt gcagcctcca ggccccccc tcccgaaatg gccatagg 120  
 tctgcggAAC cggtgagtac accggAAATTG ccaggacgac cgggtccTTT cttggatcaa 180  
 cccgctcaat gcctggagat ttggcgtgc ccccgcgaga ctgctagccg agtagtgg 240  
 ggtcgcgaaa ggcctgggt 260

<210> 100  
 <211> 260  
 <212> DNA  
 <213> hepatitis C virus

<400> 100  
 ccgcctgaa ccactccct gtgaggaact actgtttca cgcatggaa gtcgttccat 60  
 ggcttagta tgagtgtcgt acagcctcca ggccccccc tcccgaaatg gccatagg 120  
 tctgcggAAC cggtgagtac accggAAATTG ccgggaagac tgggtccTTT cttggataaa 180  
 cccactctat gcccggtcat ttggcgtgc ccccgcaaga ctgctagccg agtagcg 240  
 ggttgcgaaa ggcctgggt 260

<210> 101  
 <211> 260  
 <212> DNA  
 <213> hepatitis C virus

<400> 101  
 ccgcctgaa tcactccct gtgaggaact actgtttca cgcatggaa gtcgttccat 60  
 ggcttagta tgagtgtcgt acagcctcca ggccccccc tcccgaaatg gccatagg 120  
 tctgcggAAC cggtgagtac accggAAATTG ccggaaagac tgggtccTTT cttggataaa 180  
 cccactctat gtccggtcat ttggcgtgc ccccgcaaga ctgctagccg agtagcg 240  
 ggttgcgaaa ggcctgggt 260

<210> 102  
 <211> 190  
 <212> DNA  
 <213> hepatitis C virus

<400> 102

cgagtgtcgt	gcagcctcca	ggacccccc	tcccggaga	gccatagtgg	tctgcggaac	60
cggtagtac	accggaatcg	ctgggtgac	cgggtcctt	cttggaaaca	cccgctcaat	120
accagaaaat	ttgggcgtgc	ccccgcgaga	tcactagccg	agtatgttg	ggtcgcgaaa	180
ggccttgggt						190
<210>	103					
<211>	227					
<212>	DNA					
<213>	hepatitis C virus					
<400>	103					
gtttcacgc	agaaagcgtc	tagccatggc	gttagtatga	gtgttgtaca	gcctccagga	60
ccccccctcc	cgggagagcc	atagtggtct	gcggAACCGG	tgagtacacc	ggaatcgctg	120
gggtgaccgg	gtccttctt	ggataaaccc	gctcaatgcc	cgaaatttg	ggcgtgcccc	180
cgcagaactg	ctagccgagt	agtgttgggt	cgcgaaaggc	cttgggt		227
<210>	104					
<211>	177					
<212>	DNA					
<213>	hepatitis C virus					
<400>	104					
gagtgtcgtg	cagcctccag	gccccccct	cccgggagag	ccatagtggt	ctgcggaacc	60
ggtagtaca	ccggaatcgc	cgggatgacc	gggtccttc	ttggaaacaac	ccgctcaatg	120
cccgaaatt	tgggcgtgcc	cccgcgagat	cactagccga	gtagtgttgg	gtcgcga	177
<210>	105					
<211>	109					
<212>	DNA					
<213>	hepatitis C virus					
<400>	105					
gagtgttcta	cagcctccag	gccccccct	cccgggagag	ccatagtggt	ctgcggaacc	60
ggtagtaca	ccggaatcgc	cgggatgacc	gggtccttc	ttggatcaa		109
<210>	106					
<211>	109					
<212>	DNA					
<213>	hepatitis C virus					
<400>	106					
gagtgttcta	cagcctccag	gacccccc	cccgggagag	ccatagtggt	ctgcggaacc	60
ggtagtaca	ccggaatcgc	caggacgacc	gggtccttc	ttggatcaa		109

<210> 107  
<211> 109  
<212> DNA  
<213> hepatitis C virus

<400> 107  
gagtgttgc cagcctccag gaccccccct cccgggagag ccatagtggt ctgcggacc 60  
ggtgagtaca ccggaatcgc cgggatgacc gggtccttc ttggataaa 109

<210> 108  
<211> 177  
<212> DNA  
<213> hepatitis C virus

<400> 108  
gagtgtcgaa cagcctccag gaccccccct cccgggagag ccatagtggt ctgcggacc 60  
ggtgagtaca ccggaattgc cgggatgacc gggtccttc ttggataaa ac ccgctcaatg 120  
cccgaggatt tgggcgtgcc cccgcgagac tgctagccga gtatgttgg gtcgcga 177

<210> 109  
<211> 180  
<212> DNA  
<213> hepatitis C virus

<400> 109  
gagtgtcgta cagcctccag gcccccccct cccgggagag ccatagtggt ctgcggacc 60  
ggtgagtaca ccggaattgc caggatgacc gggtccttc cattggatca aaccgccta 120  
atgcctggag atttggcggt gcccccgcaa gactgctagc cgagtagtgt tgggtcgca 180

<210> 110  
<211> 112  
<212> DNA  
<213> hepatitis C virus

<400> 110  
gagtgtcgta cagcctccag gcccccccct cccgggagag ccatagtggt ctgcggacc 60  
ggtgagtaca ccggaattgc caggatgacc gggtccttc cattggatca aa 112

<210> 111  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 111

Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala  
65 70 75 80

Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Ala

<210> 112  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 112

Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Arg Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala  
65 70 75 80

Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Ala

<210> 113  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 113

Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Arg Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Arg Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala  
65 70 75 80

Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Ala

<210> 114  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 114

Ser Thr Val Thr Glu Asn Asp Ile Arg Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Asn Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ala Leu Arg  
100 105 110

Ala

<210> 115

<211> 113

<212> PRT

<213> hepatitis C virus

<400> 115

Ser Thr Val Thr Glu Ser Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Val Ile Arg Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Asn Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 116  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 116

Ser Thr Val Thr Gln Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Arg Ala Ile Lys Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Asn Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 117

<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 117

Ser Thr Val Thr Glu Ser Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 118  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 118

Ser Thr Val Thr Glu Ser Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Arg Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Asn Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ala Leu Arg  
100 105 110

Ala

<210> 119  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 119

Ser Thr Val Thr Glu Ser Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Lys Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Asn Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 120  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 120

Ser Thr Val Thr Glu Ser Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Lys Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Thr Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Asn Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 121  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 121

Ser Thr Val Thr Glu Asn Asp Ile Arg Val Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Ala Pro Glu Ala Arg Gln Ala Ile Lys Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Leu Thr Asn Ser Lys Gly Gln Asn

35

40

45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys  
50 55 60

Gly Asn Thr Leu Thr Cys Tyr Leu Lys Ala Ser Ala Ala Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Met Leu Val Asn Gly Asp Asp Leu Val  
85 90 95

Val Ile Cys Glu Ser Ala Gly Thr Gln Glu Asp Ala Ala Ser Leu Arg  
100 105 110

Val

<210> 122  
<211> 113  
<212> PRT  
<213> hepatitis C virus  
  
<400> 122

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Arg  
1 5 10 15

Ala Cys Ser Leu Pro Glu Glu Ala His Thr Ala Ile His Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Phe Asn Ser Lys Gly Gln Thr  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Met  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Val Lys Ala Leu Ala Ala Cys Lys Ala  
65 70 75 80

Ala Gly Ile Ile Ala Pro Thr Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ser Glu Ser Gln Gly Thr Glu Glu Asp Glu Arg Asn Leu Arg  
100 105 110

Ala

<210> 123  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 123

Ser Thr Val Thr Glu Arg Asp Ile Arg Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Ala Cys Ser Leu Pro Gln Glu Ala Arg Thr Val Ile His Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Val Gly Gly Pro Met Thr Asn Ser Lys Gly Gln Ser  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ala Cys Lys Ala  
65 70 75 80

Ala Gly Ile Val Asp Pro Val Met Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Ile Ser Glu Ser Gln Gly Asn Glu Glu Asp Glu Arg Asn Leu Arg  
100 105 110

Ala

<210> 124  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 124

Ser Thr Val Thr Glu Gln Asp Ile Arg Val Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asn Leu Glu Pro Glu Ala Arg Arg Val Ile Ser Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Cys Gly Gly Pro Met Phe Asn Ser Lys Gly Ala Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ala Lys Ala  
65 70 75 80

Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Val Ala Glu Ser Asp Gly Val Asp Glu Asp Arg Ala Ala Leu Arg  
100 105 110

Ala

<210> 125  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 125

Ser Thr Val Thr Glu Gln Asp Ile Arg Val Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asn Leu Glu Pro Glu Ala Arg Lys Val Ile Ser Ser Leu Thr  
20 25 30

Glu Arg Leu Tyr Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Val Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Arg Ala  
65 70 75 80

Ala Gly Leu Arg Asn Pro Asp Phe Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Val Ala Glu Ser Asp Gly Val Asp Glu Asp Arg Thr Ala Leu Arg  
100 105 110

Ala

<210> 126  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 126

Ser Thr Val Thr Glu His Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Ser Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Met Tyr Asn Ser Lys Gly Leu Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ser Arg Ala  
65 70 75 80

Ala Gly Leu Lys Asp Pro Ser Phe Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Val Ser Glu Ser Cys Gly Val Glu Glu Asp Arg Ala Ala Leu Arg  
100 105 110

Ala

<210> 127  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 127

Ser Thr Val Thr Glu Gln Asp Ile Arg Thr Glu Glu Glu Ile Tyr Gln  
1 5 10 15

Cys Cys Asp Leu Glu Pro Glu Ala Arg Lys Ala Ile Ser Ala Leu Thr  
20 25 30

Glu Arg Leu Tyr Ile Gly Gly Pro Met Tyr Asn Ser Lys Gly Leu Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Pro Thr Ser Phe  
50 55 60

Gly Asn Thr Ile Thr Cys Tyr Ile Lys Ala Thr Ala Ala Ser Arg Ala  
65 70 75 80

Ala Gly Leu Lys Asp Pro Ser Phe Leu Val Cys Gly Asp Asp Leu Val  
85 90 95

Val Val Ser Glu Ser Cys Gly Val Glu Glu Asp Arg Ala Ala Leu Arg  
100 105 110

Ala

<210> 128  
<211> 113  
<212> PRT  
<213> hepatitis C virus

<400> 128

Ser Thr Val Thr Glu His Asp Ile Met Thr Glu Glu Ser Ile Tyr Gln  
1 5 10 15

Ser Leu Tyr Leu Gln Pro Glu Ala Arg Val Ala Ile Arg Ser Leu Thr  
20 25 30

Gln Arg Leu Tyr Cys Gly Gly Pro Met Tyr Asn Ser Lys Gly Gln Gln  
35 40 45

Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Phe Thr Thr Ser Met  
50 55 60

Gly Asn Thr Met Thr Cys Tyr Ile Lys Ala Leu Ala Ser Cys Arg Ala  
65 70 75 80

Ala Lys Leu Gln Asp Cys Thr Leu Leu Val Cys Gly Asp Asp Leu Val

85

90

95

Ala Ile Cys Glu Ser Gln Gly Thr His Glu Asp Lys Ala Ser Leu Arg  
100 105 110

Ala